

**LISTING OF THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-24 (Canceled)

25. (Previously Presented) A process for producing a surface-modified layer system comprising a substrate having a surface and a self-assembled monolayer (SAM) anchored to at least part of said surface, wherein said SAM is comprised by aryl or rigid alicyclic moiety species, said process comprising the steps of:

- a) providing a SAM anchored to a substrate, wherein said SAM is polymorphic having at least first and second structural forms; and
- b) thermally treating said SAM so as to change said SAM from said first structural form to said second structural form.

26. (Previously Presented) A process according to claim 25, which process includes the preliminary steps of:

- a) providing a said substrate and a compound having a selected said aryl or rigid alicyclic moiety species and an anchor moiety bondable to said substrate so as to exert a directive force with respect to the molecular orientation of said compound, said selected aryl moiety species having a plurality of different parameters affecting the energy-balance of the SAM, wherein at least two of said parameters exert opposing directive forces arising from the molecule-substrate interaction which have a substantially competitive effect on said energy-balance which results in polymorphism of said SAM; and
- b) bonding of said compound to said substrate.

27. (Previously Presented) A thermo-lithographic process comprising a process according to claim 25 wherein a desired pattern is transferred to said SAM using said thermal treatment so as to change selectively part of said SAM from said first structural form to said second structural form.

28. (Previously Presented) A process according to claim 27 wherein in said pattern transferring step there is used a thermal treatment applied selectively to only part of the SAM in accordance with a negative image of said desired pattern so that the thermally treated areas are rendered more stable compared to the untreated ones.

29. (Previously Presented) A process according to claim 27 wherein said thermal treatment is selected from: direct contact with a heated body or a heated fluid; and exposure to thermal radiation.

30. (Previously Presented) A process according to claim 29 wherein said radiation is pulsed.

31. (Previously Presented) A process according to claim 27 wherein said SAM is raised to a temperature of at least 100°C.

32. (Previously Presented) A process according to claim 27 wherein the thermal treatment is carried out in a substantially inert environment.

33. (Previously Presented) A process according to claim 27 wherein said thermal treatment is formed and arranged for parallel-form pattern transfer.

34. (Previously Presented) A process according to claim 27 wherein said thermal treatment is formed and arranged for serial-form pattern transfer.

35. (Previously Presented) A process according to claim 27, which process includes the further step of developing the thermally treated SAM by subjecting it to further processing so as to substantially modify selectively one of: thermally treated and non-thermally treated parts of the SAM.

Claims 36-48 (Canceled)

49. (Currently Amended) A surface-modified layer system comprising a substrate having a surface and a self-assembled monolayer (SAM) anchored to at least part of said surface, wherein said SAM is comprised by an aryl or rigid alicyclic moiety species, the SAM having a first less stable structural form prior to heat treatment and a second more stable structural form after heat treatment, wherein said second more stable structural form SAM further comprises domain sizes that exceed  $10^5$  square nanometers ( $\text{nm}^2$ ).

50. (Previously Presented) A surface-modified layer system comprising a substrate having a surface and a self-assembled monolayer (SAM) anchored to at least part of said surface, wherein said SAM is comprised by a aryl or rigid alicyclic moiety species in a substantially stable structural form derived, in situ, by thermal treatment from a less stable structural form, wherein said SAM is comprised by a compound which comprises an anchor moiety, and an optionally substituted, aryl (including hetero-aryl) moiety and which includes a spacer moiety between the anchor moiety and the aryl moiety, wherein said substrate comprises gold, said anchor moiety comprises thiol, and the spacer group is selected from C2, C4, C6, C8, and C10, alkyl.

51. (Previously Presented) A surface-modified layer system comprising a substrate having a surface and a self-assembled monolayer (SAM) anchored to at least part of said surface, wherein said SAM is comprised by a aryl or rigid alicyclic moiety species in a substantially stable structural form derived, in situ, by thermal treatment from a less stable structural form, wherein said SAM is comprised by a compound which comprises an anchor moiety, and an optionally substituted, aryl (including hetero-aryl) moiety and which includes a spacer moiety between the anchor moiety and the aryl moiety, wherein said substrate comprises silver, said anchor moiety comprises thiol, and the spacer group is selected from C1, C3, C5, C7, and C9, alkyl.

52. (Previously Presented) A surface-modified layer system comprising a substrate having a surface and a self-assembled monolayer (SAM) anchored to at least part of said surface, wherein said SAM is comprised by a aryl or rigid alicyclic moiety species in a substantially stable structural form derived, in situ, by thermal treatment from a less stable structural form, wherein said SAM is a 4-(4'-Methyl-biphenyl-4-yl)-alkane-1-thiol.

53. (Previously Presented) A system according to claim 52 wherein said alkane is C1 to C10 alkane.
54. (New) A system according to claim 50 wherein said aryl moiety is a polycyclic aryl.
55. (New) A system according to claim 51 wherein said aryl moiety is a polycyclic aryl.
56. (New) A system according to claim 50 wherein said aryl moiety comprises at least one of biphenyl, terphenyl, anthracyl, naphthyl, bipyridyl, terpyridyl, bithienyl or terthienyl.
57. (New) A system according to claim 51 wherein said aryl moiety comprises at least one of biphenyl, terphenyl, anthracyl, naphthyl, bipyridyl, terpyridyl, bithienyl or terthienyl.